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COMPARING EMPLOYMENT TRAJECTORIES BEFORE AND AFTER FIRST IMPRISONMENT IN FOUR NORDIC COUNTRIES

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Employment plays a crucial role in the re-entry process and in reducing recidivism among offenders released from prison. But at the same time, imprisonment is generally regarded as harmful to post-release employment prospects. Little is known, however, about whether or not offenders' employment trajectories before and after imprisonment are similar across countries. As a first step towards filling this gap in research, this paper provides evidence on employment trajectories before and after imprisonment in four Nordic welfare states: Denmark, Finland, Norway and Sweden. Using data gathered from administrative records on incarcerated offenders, the analysis focuses on individuals imprisoned for the first time and who served a prison sentence less than one year in length. Results show that although employment trajectories develop in mostly similar ways before and after imprisonment across these countries, important differences exist.

Key Words: incarceration, employment, re-entry, comparative research, register-based analysis

Introduction

Criminologists have had a long-lasting interest in the association between employment and crime. Most often, researchers have examined the effect of unemployment on crime (e.g. Cantor and Land 1985; van der Geest *et al.* 2011), and particular attention has been devoted to the possibly desistance-promoting effect of employment after imprisonment (Laub and Sampson 2003; Bushway and Apel 2012). The reverse association, the impact of crime and criminal sanctions on employment have been studied much less, although interest in this question has recently increased as a result of mass incarceration in the United States (Ramakers *et al.* 2015).

The effect of *imprisonment* on *post-release employment* is perhaps the most acute issue in these inquiries. Prisoners face several barriers to employment at the time of release from prison. Time spent in prison reduces human and social capital (Waldfogel 1994; Western *et al.* 2001), and potential employers are reluctant to hire persons with a criminal record (Cohen and Nisbett 1997; Pager 2003). Imprisonment also makes recidivism more likely by introducing offenders to criminal peers (Bayer *et al.* 2009). But at the same time, persistent offenders are characterized by problematic individual

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characteristics, such as accumulated problems relating to social issues, health, drug use, social relations, as well as formal skills and job experience (Nilsson 2003; Skarðhamar 2003; Nilsson and Estrada 2011). Such individual factors are also likely to impact post-imprisonment employment regardless of a prison stay. Therefore, even though the literature typically views the impact of incarceration as negative, opposite effects are possible too. Successful rehabilitation programmes for substance-abuse problems, for example, could increase the likelihood of employment among some prisoners.

Although many of the potential mechanisms that impact the chances of employment following release are plausibly universal, it could also be the case that national penal policies, prison rehabilitation programmes and labour-market conditions moderate the effect of incarceration on employment. The effect of imprisonment on employment may thus vary across countries. Consequently, if there are countries where former inmates are able to find work after release better than elsewhere, the prison programmes and post-release practices from those countries could inform better policies elsewhere. No comparative studies, however, have analysed employment trajectories before and after incarceration using individual-level data from different countries.

The current study looks at within-individual changes in employment before and after first prison sentences in Denmark, Finland, Norway and Sweden. The measure of employment is based on salary from work. We examine employment trajectories five years before first imprisonment, while the follow-up length varies between four and five years. In each country, we use total population records of incarcerated offenders or total birth cohorts (Sweden) of first-time imprisonments.

It is pivotal to measure long trajectories of labour-market outcomes. One might easily be led to compare employment after imprisonment with employment rates *at* entry, but this would cause issues (due to e.g. pre-trial custodies) with the timing of measurements both before and after imprisonment. A previous Danish study, for example, showed that compared with a non-convicted group of a similar age, employment rates of inmates fell gradually for a period leading up to imprisonment (and gradually returned to almost the same level sometime after release), whereas income levels stagnated to lower levels post-release (Tranæs and Geerdsen 2008). Thus, as the results are likely to depend on *when* the outcomes are measured, one should preferably report a longer sequence of employment outcomes both before and after imprisonment. As was already mentioned, we measure labour-market outcomes up to five years before and after a person's first imprisonment.

If estimating causal effects is difficult in observational studies using data from a single country, it is much more challenging in comparative studies. Due to selection mechanisms, post-release employment rates of ex-prisoners do not tell us much about the effect of imprisonment. In contrast, studying changes in employment-related outcomes for the same persons before and after imprisonment would be informative about the extent to which there is a change that needs explaining. Differences across countries in these changes might also indicate where to look for possible best practices, in order to improve post-release employment prospects for offenders in all countries.

Nordic context—a comparison of 'most similars'

A number of different recommendations exist in terms of the kinds of countries to select for cross-national comparisons (for an overview, see Westfelt and Estrada 2005).

The 'most different approach' suggests including data from countries whose structures are as unlike as possible, whereas the 'most similar approach' opts to include data from countries that resemble one another as much as possible. When findings with relevance for crime policy are sought, the most similar approach is appropriate. Since we study employment trends after imprisonment (the dependent variable), a sample of countries that are similar to one another in other respects (independent variables) allows us to downplay these similarities and therefore also to limit the number of potential explanations for any differences that emerge.

A comparative study consisting of the Nordic countries is a clear example of a most similar approach, and these countries are often treated as belonging to the same cluster in international comparisons. All the countries are, for example, known for their moderate sentence lengths, comparatively good prison conditions and generous welfare regimes, which also offer employment services and support to ex-convicts (Pratt 2008). But even though the Nordic countries have the lowest incarceration rates among developed democracies (Lappi-Seppälä 2011), it is not clear whether these contextual factors protect people from the potentially deleterious effects of imprisonment.

The Nordic countries are also similar in another important respect, as they all have access to high-quality population-wide register data (Lyngstad and Skardhamar 2011). This makes comparative studies across the Nordic countries feasible, although the register systems and measures are not identical. In the following, trends in the use of imprisonment and unemployment in the Nordic countries are described. As will be apparent, there are clear similarities between the countries but also some notable differences in both their criminal justice systems and labour-market conditions.

Prison populations in the Nordic countries

The Nordic countries are often seen as 'exceptional' in that they have moderate punitive policies (Pratt 2008). The median European prison population rate is about 133 inmates per 100,000 inhabitants. In the Nordic countries, it is markedly lower: in Norway and Denmark, there are around 70 inmates per 100,000; in Finland and Sweden, there are around 60 (Aebi and Delgrande 2015). Figure 1 presents the prison population rate in the Nordic countries since 1990. Despite the different starting levels and some divergence during the last years, where we see a decrease in Finland and Sweden, the trends and levels have been quite similar for some time.

When it comes to recidivism rates, estimates based on comparable data suggest that Norway has the lowest rate and Sweden the highest. In a study of prisoners released in 2005, 20 per cent of the Norwegian prisoners received a new sentence within two years compared with 29 per cent in Denmark, 36 per cent in Finland and 43 per cent in Sweden. These results reflect differences in the criminal sanctions system and the selection of those serving time in prison compared with those serving on probation (Graunbøl *et al.* 2010). For example, prison sentences are imposed as a sanction more frequently in Denmark and Norway than in Finland and Sweden. In 2005, the rate of new prison sentences per 100,000 inhabitants was around 170 in Denmark and Norway and only around 100 in Finland and Sweden (von Hofer *et al.* 2012). This is reflected in the number of admittances as well. At the same time, prison sentences are on average longer in Sweden and Finland than in Denmark and Norway (von Hofer *et al.* 2012).

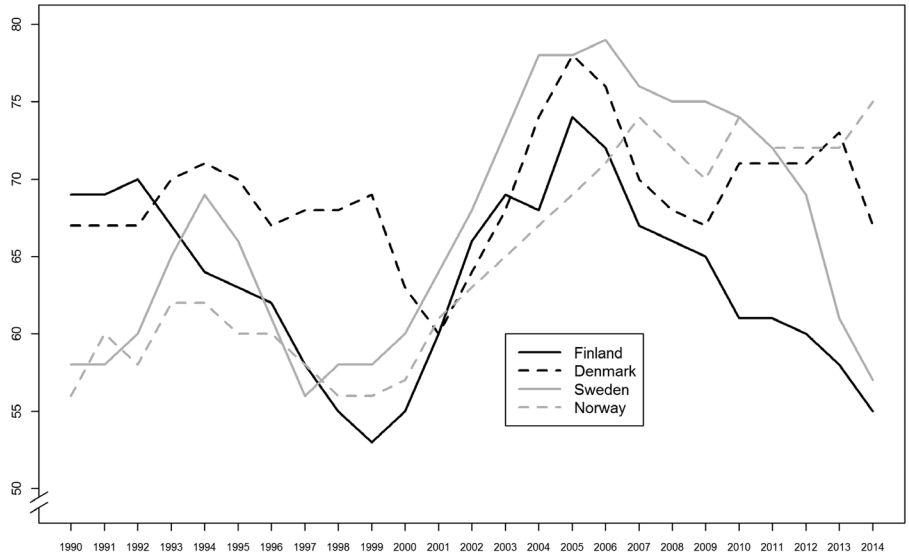

FIG. 1. Prison rates (including remand prisoners) 1990–2014. Source: 1985–2010: von Hofer *et al.* 2012; 2011–14: Aebi *et al.* 2015.

Unemployment rates in the Nordic countries

The Nordic countries share many features as far as a welfare state and the labour markets are concerned. Distinguishing features are low levels of income inequality, generous and comprehensive welfare state provisions, strong labour-market organization and high employment rates. Despite the fact that the Nordic countries in recent decades have become more like other comparable countries in many respects, it was recently claimed that, at least in terms of income inequality, these countries still constitute 'a family of their own' (Fritzell *et al.* 2012).

Nevertheless, there are important differences between these countries, which might be of importance when interpreting cross-country differences in the labour-market outcomes of inmates. Perhaps most crucial are unemployment rates. Although comparing unemployment rates across countries is a difficult task with many caveats, in general these rates still reflect the ability of the labour market to respond to the demand for jobs in an economy.

Figure 2 shows the unemployment rate among those aged 15–74 in Denmark, Finland, Norway and Sweden for the period 1990–2014 and for the EU-27 for the period 2000–14 as reported by Eurostat. Four observations are important. First, the effect of the crisis in the 1990s hit Finland and Sweden hard. Denmark and Norway were affected as well but not to the extent of the other two countries. In Finland and Sweden, the crisis also had long-lasting effects and the unemployment rates never recovered to pre-crisis levels. Second, it is obvious that Norway in particular, but also Finland and Sweden, were relatively mildly hit by the latest financial crisis within our observation period, whereas Denmark was hit harder. Third, except for Finland during the first years of the 2000s, the unemployment rates in all four countries were below the EU-27 average. Fourth, during the 2000s, which is the observation window in the analyses below, we find the lowest unemployment rates in Norway followed by Denmark, Sweden and Finland.

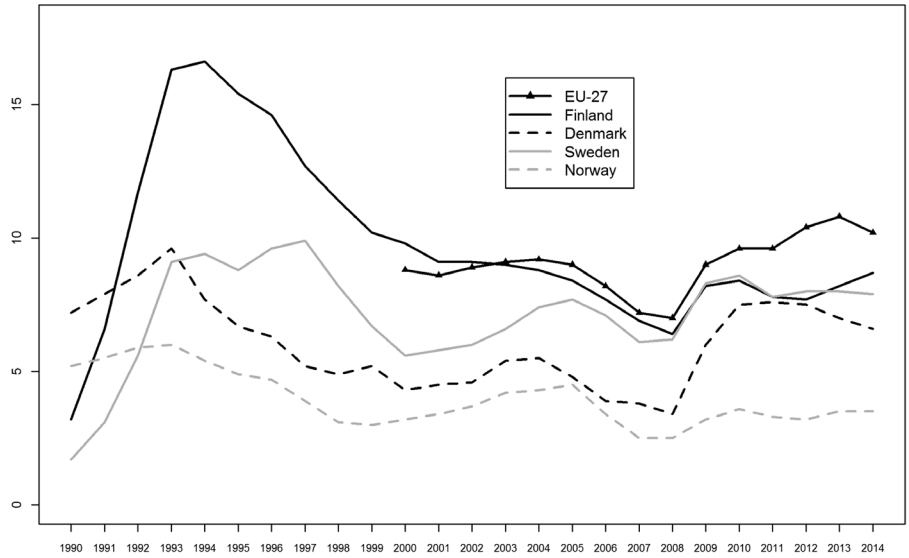

FIG. 2. Unemployment rate in Denmark, Finland, Norway, Sweden (1990–2014) and EU-27 (2000–2014). Percent of labour force at ages 15–74. Source: http://ec.europa.eu/eurostat/web/lfs/data/main-tables (last accessed 11 June 2015).

Prior research on the effect of incarceration on employment

An increasing number of studies have analysed the effects of criminal behaviour and criminal sanctions on later life outcomes, including employment (Tranæs and Geerdsen 2008), morbidity (Massoglia 2008; Piquero *et al.* 2011) and mortality (Skarðhamar and Skirbekk 2013; Pridemore 2014). Many studies have found that incarceration has negative effects on both employment and income. Waldfogel (1994) finds that first prison sentences decrease employment rates by 5 percentage points and lowers income by 30 per cent. This effect, however, is partly conditional on 'breach of trust': if the employee committed a crime while taking advantage of the trust granted to him/her by his/her employer, the observed decrease in income after prison was greater. Grogger (1995) finds similar effects in terms of the relationship between prison stay and income and employment; however, he finds only short-lived effects for other sanction types. Furthermore, a recent study using Dutch data found worse labour-market outcomes after longer sentences when accounting for selection issues by matching a variety of pre-prison covariates (Ramakers *et al.* 2015). Also, some evidence suggests that the effects of imprisonment are more pronounced for income than for employment rates (Western *et al.* 2001).

Other studies, however, find no employment effects of incarceration. Loeffler (2013), for example, uses a random assignment of judges (who have large sentencing disparities in their use of imprisonment) as an instrument for sentence severity to estimate the effect of imprisonment on later life outcomes. He finds no effect of imprisonment on employment rates or on criminal recidivism.

Still other studies find positive effects of incarceration. Kling (2006), for example, also exploited the random assignment of judges to cases and found better short-term

employment outcomes among those serving longer sentences. But these differences diminished with time, although not to the extent that longer incarceration appeared more harmful. Landersø (2015) analysed a policy reform in Denmark that resulted in slightly longer sentences to violent offenders in 2002. He found that the (small) increase in sentence lengths resulted in better labour-market outcomes. He speculates that this effect could be attributed to increased rehabilitation participation among short-term prisoners, as they would not have been able to participate in these programmes under the pre-reform scheme.

Prior research findings about the effects of incarceration on labour-market outcomes are thus somewhat inconclusive, and recent Nordic studies on the effects of criminal sanctions thus probably provide the most important comparison for the current study. These studies raise the important point that prisoners are often caught in poor labour-market positions long before being incarcerated. Tranæs and Geerdsen (2008), for example, show that the unemployment rates of incarcerated individuals were already roughly two times higher than those of the general population before imprisonment, highlighting an important selection issue. This selection issue also arises when comparing labour-market outcomes among offenders sentenced to different sanctions. Skarðhamar (2013a) shows that those who are sentenced to community service in Norway tend to be better off in terms of several background variables in comparison to incarcerated controls. One potential mechanism causing such inequalities is eligibility requirements for alternative sanctions (Aaltonen 2015).

Even after accounting for selection bias, recent Nordic studies suggest that imprisonment worsens the labour-market situation. Comparing incarcerated individuals to an age-matched control group in Denmark, Tranæs and Geerdsen (2008) show that while post-incarceration unemployment rates reach pre-incarceration levels in a longer before–after comparison, the levels of benefit dependence remain higher and levels of income lower after serving a prison sentence. Furthermore, the deterioration of labour-market status appears to be greater for those serving longer sentences. The negative effect of imprisonment for labour-market attachment is also validated by Nordic studies on non-custodial alternatives to imprisonment (which were, indeed, introduced to minimize the harm of imprisonment on, for example, employment prospects). These studies have shown that community service and electronic monitoring are less damaging to labour-market outcomes than incarceration (Skarðhamar 2013a; 2013b; Andersen 2014; Andersen and Andersen 2014).

In sum, studies of the effects of incarceration on labour-market outcomes show mixed results, although most studies using Nordic data find negative effects, especially those that compare imprisonment to noncustodial alternatives. However, all the existing studies only use samples from a single country, and we do not know how the effects of incarceration on labour-market outcomes compare across countries.

Current Study

The current study compares employment trajectories before and after first imprisonment in four Nordic countries. Examining the overall pattern of employment among prisoners over a longer term both before and after release is important not only because of any potential causal effect that imprisonment has but generally to understand the

scale and nature of employment challenges at release. And, as was just mentioned, we do not know how these patterns compare across countries. Although prisoners are likely to meet substantial challenges in all countries, in general and regarding labour-market outcomes, our comparison of employment trajectories in four 'most similar' countries provides us one way of understanding the relative scale of these issues in a given country and across countries.

If national unemployment rates correlate with unemployment rates of the prison population, which seems very likely, we should expect the lowest labour-market attachment in Finland and the highest in Norway. At the same time, if inmates constitute a more selected group in Finland and Sweden than in Norway and Denmark (as a consequence of higher admittance rates and shorter sentences in the two latter countries), we should expect the employment levels of inmates in Sweden and Finland to be lower. Regarding the effect of imprisonment itself, it is harder to say what the expectations are. If differences in recidivism rates between the Nordic countries provide any clues of employment after release, we should expect better outcomes among Norwegian and Danish prisoners compared with Finnish and Swedish prisoners.

The aim of the current study is to provide a simple comparative setting for examining differences and similarities in employment trajectories before and after imprisonment. We use long observation windows both before and after incarceration to provide a reliable picture of employment trajectories. At the same time, any assessment of employment outcomes after imprisonment should be sensitive to the fact that many incarcerated offenders have very little work experience to begin with, which is likely to impact people's chances of finding employment even in the absence of imprisonment. With these issues in mind, we examine individuals convicted and serving their *first prison sentence*, and analyse within-individual changes in *salary from work* during the years before and after incarceration. Although we present results on absolute levels (percentage employed), the main focus is on *relative change* before and after.

We focus on first imprisonment for both substantial and practical reasons. If imprisonment has a negative effect on employment, one could argue that the potential impact of first imprisonment (relative to no incarceration) is greater than that of further incarceration periods, given that the latter individual has already received the negative stigma (Schwartz and Skolnick 1962) of a former prisoner. In practical terms, focusing on the first incarceration period makes controlling for 'street time' (excluding time spent in prison) prior to incarceration easier, as the individual should (at least in principle) have been in the labour force prior to the incarceration period.

Data and Methods

Although the Nordic countries have similar systems and legislations for uses of administrative records for statistical and research purposes, comparative studies have so far been rare (see, however, Graunbøl *et al.* 2010; Skarðhamar *et al.* 2014; Bäckman *et al.* 2015), which also means that the comparability of these datasets is an unexplored domain. Finding and accessing data that are similar in terms of sample composition, criminal sanctions and labour-market measures is the first challenging step (see, e.g. Bäckman *et al.* 2015). Data protection guidelines prevented us from pooling the data from the four countries.

We deploy datasets from each of the four countries that were available at the time. The datasets available for the comparison were more detailed and flexible in Denmark and Norway, whereas the Finnish and Swedish data were somewhat more restricted. For this reason, the latter datasets set the limits within which the analyses operate. For all countries except Sweden, we choose all first imprisonments from years 2004 to 2005. The Finnish sample is based on all individuals sentenced to imprisonment during 2004–05. The prison records were then used to determine if this was their first time in prison. The Swedish data have a cohort design, including the total 1975 Swedish birth cohort. Given the cohort design for the Swedish data, the first imprisonments cannot be detected for all ages without making the observation window wider. For this reason, the Swedish estimates are based on first imprisonments between 1998 and 2008 for the 1975 birth cohort.

We use yearly measures of labour-market outcomes in all countries and analyse a person's labour-market situation before and after his or her first imprisonment. Thus, rather than searching for comparable control groups within (to obtain causal estimates within each country) and across (to obtain the comparability of the causal estimates from within each country) the four countries, we apply a within-individual design and simply compare the trajectories of employment across countries. The independent variable of interest is thus a measure of time relative to incarceration, with the year of first incarceration given the value 0. Years before and after this period are then given values of –5 to 5, respectively.

The key results are presented as age-group specific means. Many first-time prisoners are relatively young, and their employment rates and income levels are expected to improve due to the fact that they were still studying in the period before imprisonment. Consequently, a life-course transition from education to employment might cause a within-individual increase in employment rates even if prison had negative effects on employment. For this reason, we present results separately for three different age groups: 20–24, 25–30 and 30+ years of age. The Swedish data are only available for the two youngest age groups. Between-country comparisons within these age groups will inform us about potential differences in the impact of imprisonment on labour-market outcomes across countries, especially if we assume that the life-course transitions happen at roughly equal ages in these countries.

To adjust the results for people who did not have the chance to be employed in a given year, we exclude people who emigrated, died or were re-imprisoned during each of the years. Thus, all people did not contribute equally to the denominator in all the years. To account for this, we construct a weight within each year to express the proportion of the year each person had 'street-time', which refers to being not imprisoned, being alive and being resident in the country. Before creating the outcome variables, we first apply these weights to adjust the yearly salaries for periods of absence from the labour force and exclude those individuals who were absent from the labour force for the entire year.

Direct measures of employment and unemployment exist in the Nordic countries, but these are less comparable due to how the welfare system is organized in each country. For this reason, our analysis is based on salaries from work reported to the tax authorities in each country. Since total incomes potentially consist of more than salaries, our measure is primarily an indicator of participation in the labour market. However, as average salaries differ between the countries, comparison of a continuous measure of

income is difficult. We report two different measures for each year before and after imprisonment: (1) The proportion of people with any salary, indicating some contact with the labour market, although not necessarily earning enough to make a living. This measure relates better to complete labour-market inactivity. (2) The proportion of people earning over half of the national median salary, indicating that work is a non-negligible source of income. Earning over the national median is relatively rare in these populations, so we decided to use a lower threshold that would still capture meaningful interaction with the labour market similarly in all four countries. Although earning over half the median salary does not signal high-quality or permanent employment, it does indicate at least some meaningful spell of work during a given year.

Results

Descriptive statistics in Table 1 summarize key sample characteristics. The higher rate of admittances in Norway and Denmark results in a larger dataset in those countries compared with Finland, while the sentences are consequently longer in Finland. Although the Nordic countries have similar prison rates (see Figure 1), such figures are based on cross-sectional measures. It is apparent that Norway, at least, makes use of shorter sentences to a much larger extent than the other countries, resulting in a larger flow of people through the prison system over a year. For this reason, large differences exist in the sample sizes in Table 1.

The compositions of the samples of people imprisoned for the first time differ in terms of the mean ages at imprisonment. The Swedish data with the cohort design has a much lower mean age than the other countries. The mean age at first imprisonment is slightly lower in Denmark than in Finland and Norway. The most striking difference between the countries is the five-year mortality rate after first imprisonment. The rate is 2.2 per cent in Denmark, 3.8 per cent in Norway and as high as 9.1 per cent in Finland. Although we cannot rule out the possibility that incarceration itself affected these figures, this suggests that the Finnish inmates are more marginalized and have poorer health than their counterparts in other Nordic countries. The lowest mortality rate in Sweden is partly related to a different sample composition, as it only refers to those aged 20–30 at first imprisonment. Table 1 also shows the five-year recidivism rates defined as a new prison sentence for a crime committed after the date of initial imprisonment. Finland has the highest recidivism rate (44 per cent), closely followed by Sweden (37 per cent), whereas Denmark and Norway have substantially lower recidivism rates at about 23 per cent.

Table 1 *Overview of samples—descriptive statistics*

	Denmark	Finland	Norway	Sweden[a]
N	4,364	1,643	7,124	1.626
Mean age (year of first incarceration)	30.7	32.9	33.5	23.6
Mean imprisonment length (months)	2.5	4.9	1.8	2.6
Dead 5 years after first imprisonment	2.2%	9.1%	3.8%	2.0%
Recidivism 5 years after first imprisonment	22.7%	44.1%	23.1%	37.1%

[a]Swedish data include individuals imprisoned only between ages 20 and 30.

Figure 3 shows the proportion of people earning any salary from work during a given year (see Table A1 in Appendix for proportions). Across the age groups, large proportions of inmates in all countries have no salaries at all. Roughly speaking, the Finnish inmates are worse off with less than 50 per cent having any income in all age groups, whereas a large majority of the Norwegian inmates have some employment records. Denmark and Sweden fall in between.

In the youngest age group, there is a clear drop in the proportion receiving any salary in both Sweden ($t = 0$) and Finland ($t = -1$) around the time of incarceration, whereas such decreases are much more modest in Norway and Denmark. Norway displays a slight drop, but the curve is largely stable, while the Danish figures indicate a gradual decline. The extent of this drop might reflect differences in average incarceration lengths.

Although we do not expect that the youngest age group has fully entered the labour market yet, we do expect this of the age group 25–30 years. In this group, many should have been employed for a while (although perhaps only in part-time jobs while attending higher education). The overall picture is similar to that of the younger age group, even though there are more marked changes among Swedish inmates, and a more pronounced declining trend among Norwegian inmates.

We expect the oldest age group to have the strongest labour-market attachment. However, the proportion earning any salary is similar or even lower in this group. The Danish and Norwegian samples display a clearer declining trend with a larger share totally outside the labour market. The Finnish sample displays patterns that are similar to the two younger groups.

Any recorded salary is an informative measure of labour-market participation, but it does not reveal much about consumption possibilities or standard of living. Earning more than half the population median salary does, however. Figure 4 presents the proportion earning over half the national median salary before and after imprisonment in each of the four countries for each of the three age groups (see Table A2 in Appendix). Starting with the youngest group, 20- to 24-year olds, the proportions earning over half the national median salary are almost similar in all the countries five years before first imprisonment (except for Denmark, where roughly one-third of the sample has earned over half of the national median salary already five years before incarceration). This proportion stays largely similar until first incarceration in Denmark, whereas the Norwegian proportions approach similar levels one year before incarceration. In Sweden, the proportion increases to 20 per cent, whereas in Finland only 10 per cent of first-timers are

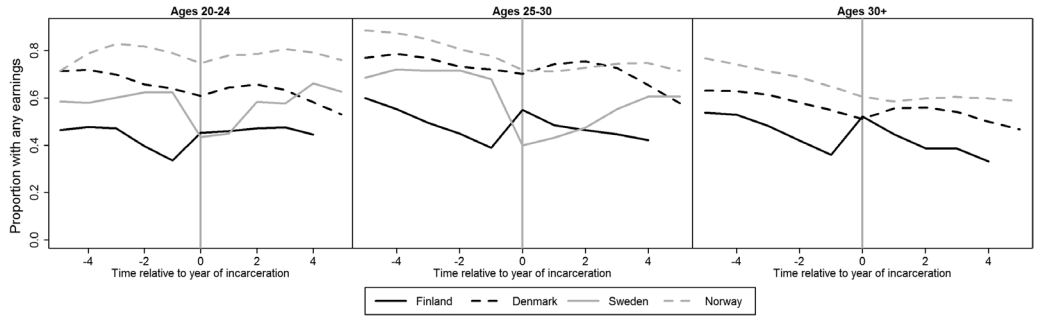

FIG. 3. Proportion earning any salary before and after imprisonment, by country and age.

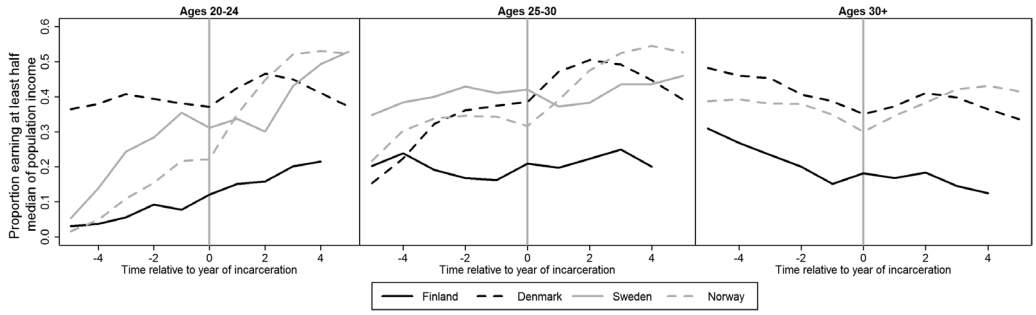

FIG. 4. Proportion earning over half the national median salary before and after first imprisonment, by country and age.

employed before incarceration. As a whole, the youngest inmates have, on average, a rather poor attachment to the labour market before incarceration. However, since this is an age group in which many people enter the labour force, transiting from school to work, the general trend is that an increasing proportion of people in this age group are working as a result of their maturation during the observation period.

The post-release trajectories, however, are similar in Norway and Sweden, while the shape of the Finnish trajectory is also similar, albeit on a much lower level. In Denmark, peak employment is reached two years after incarceration, after which the proportion decreases. Finland has by far the lowest proportion employed at the last comparable time period four years after release. Although this general increase in employment levels might suggest that incarceration has a positive effect on employment, it could just as well reflect the life-course transition from education to employment.

When looking at ages 25–30, the trajectories for Denmark and Norway are quite similar, but the Norwegian inmates reach a slightly higher level five years after release. The shapes of the Finnish and Swedish trajectories are similar at a relatively stable level, but Sweden has almost twice the level of Finland. It is notable that the average pre-incarceration labour-market attachment of this age group of inmates is also quite low (20–40 per cent employed at best), although they have had a longer time to accumulate work experience. However, it is markedly better than that of the youngest age group in all the countries (except Denmark).

If the post-release increase in the proportions earning over half the median salary for the youngest age group is closely related to life-course transitions, such transitions should have a weaker role among 25- to 30-year olds. Thus, the post-release increases in the proportions employed in Denmark and Norway are perhaps less expected. Finland and Sweden exhibit rather stable levels in a before–after comparison, and it is possible that some of the remaining life-course transition effects cancel out the potentially negative effect of imprisonment.

In the oldest age groups, the trajectories have a downward trend in both Finland and Denmark during the entire follow-up, while the Norwegian proportions are largely similar at the beginning and at the end of the follow-up. As a whole, the oldest age group is the only one where we see clear evidence of a decrease in the percentage employed in a before–after comparison. The pattern suggests that the pathway to first incarceration is one characterized by a gradually worsening employment situation in this age group, at least.

Although one should be careful with comparisons based on absolute employment levels with these measures, it seems evident that both pre- and post-incarceration

employment outcomes are worst in Finland in light of both measures used. Less than one-fifth of inmates earn more than half the national median salary by the end of the follow-up, and over half of them are not working at all. Norway seems to fare the best at the end of the follow-up, and there is an increase in the proportions earning at least half of the median salary in all three age groups in Norway when pre- and post-periods are compared. The Danish pattern seems unique in the sense that post-release outcomes for the second outcome worsen in all three age groups at the end of the follow-up after an initial improvement two years after release. There are traces of a similar pattern in Finland, but the follow-up is one year shorter. It is possible that this decrease is a reflection of the financial crisis that began in 2008, the relative effect of which was strongest in Denmark within the observation period.

Discussion

The purpose of this study was to examine the similarities and differences in average employment trajectories before and after a person's first prison sentence using comparable register data from four Nordic welfare states. By using an 11-year observation window, we sought to avoid the potential bias caused by pre-trial custodies in analyses that operate on a short-term basis.

Overall, we find some indications of worse labour-market situations after release from prison, compared with the situation before imprisonment. These changes are most pronounced for Sweden and Finland in terms of the proportion of people who have any salaries at all, and are more modest for Denmark and Norway. Although there are similarities between the countries in the average trajectories, some important differences exist as well. First, there are systematic differences in pre-imprisonment levels of employment between the countries. In light of both measures used, the pre-imprisonment labour-market attachment of Finnish first-timers is much lower than in the other countries in all examined age groups. Based on the proportion earning at least half the median salary, as a whole, Danish prisoners have the highest employment rates before entry, whereas the share earning any salary in the years before incarceration is the highest across the board in Norway.

Second, differences also exist in terms of how the employment situation develops in relation to time before incarceration. In all the countries, the proportion of people with earnings over half the national median salary is higher after release in the youngest age groups compared with the years before. This result, however, is likely to be caused by the age-related transition from education to employment, rather than being an effect of imprisonment (indeed, prior studies show that the effects of incarceration are especially detrimental for young offenders, e.g. Aizer and Doyle 2015). The development looks different using the other measure, where the overall picture suggests stable or worsening labour-market attachment in the youngest age group as well.

The employment situation of prisoners after first incarceration develops most favourably in Norway. Generally, the post-release employment rates, using both measures, are highest in that country. Among 25- to 30-year olds, both Danish and Norwegian prisoners display an increase in employment rates in the years following release. Given that life-course transitions might still cancel out some negative effects of incarceration in this age group, the sharp post-release increases in Norway and Denmark are surprising in light of previous studies. However, the initial good development is halted

in Denmark on the third year after release, suggesting potential negative longer term consequences. In this age group, the employment trajectories of Finland and Sweden are best characterized as rather stable. Once again, the alternative measure of the proportion earning any salary shows a worse development in all countries within this age group. In the oldest age group, both measures generally show a decreasing employment rate, with the exception of Norway for the first measure.

One reason for the observed differences in patterns with the two alternative outcomes is that the effect of incarceration is heterogeneous, and groups with different labour-market histories are impacted differently. Given that we see a clear decrease using the measure of any labour-market activity, one interpretation is that incarceration is more detrimental to individuals with very little employment history. If a person lacks work experience and credentials, incarceration might introduce more stigma needing to be overcome, compared with a situation in which the offender has more extensive work experience before incarceration. A prior analysis using Finnish data suggests that desisting individuals with stronger labour-market history are more likely to be employed after release (Aaltonen 2015), whereas recent Dutch studies suggest that a substantial share of released inmates are employed by their former employers (Ramakers *et al.* 2015). At this point, however, these interpretations are made with some caution, as this study did not attempt to look at individual-specific transitions in and out of employment. Furthermore, better measures are needed to capture all possible labour-market states similarly in all countries involved in the comparisons.

The evidence presented in this paper suggests that the impact of incarceration on employment is not entirely similar across the Nordic region and that differences exist in the magnitude and sometimes even the direction of the associations in the comparable age groups. The next step is to find the most important causes of these discrepancies. Given the subject matter, the first issues that need to be considered are penal policy and labour-market structure. Regarding the potential impact of penal policies, the differences between the countries in terms of employment rates are largely unsurprising given the differences in admittance rates. If we assume that a greater number of shorter sentences means that the imprisoned population is also less selected in terms of prior social disadvantage and intensity of criminal offending, this mechanism could explain the finding that Finnish inmates are generally worse off. The high level of mortality and recidivism in Finland indicates that this could be the case. However, if selection into imprisonment was the only relevant mechanism driving our results across the countries, we would have perhaps expected lower employment rates in Sweden, where admittance rates are also lower and sentences are longer (Graunbøl *et al.* 2010).

Unemployment rates clearly influenced our findings as well. The country with the lowest unemployment rate (Norway) has the best post-release employment rates, whereas the country with the highest unemployment rate (Finland) exhibits lower post-release employment figures. On the other hand, the proportion of NEETs ('not in employment, education and training') among 20- to 24-year-old youths was remarkably similar in all four countries (Bäckman *et al.* 2015) during 1995–2007. To take this analysis further, it would be useful to analyse trends in unemployment rates among crime-prone individuals over time. This would allow us to assess the effect of economic cycles on the employment of previously incarcerated individuals. A Swedish study shows that the heavy recession in the 1990s had the strongest detrimental effect on a 'persistent' offender group (Nilsson *et al.* 2013). In Finland, the part of the population with only basic education never recovered

from the same recession, and their employment rates have remained low compared with that of higher-educated groups ever since (Kalenius 2014).

Limitations

Although we sought to reduce between-country heterogeneity in our samples by focusing on first-timers, it is evident that we are not comparing identical populations. Any comparison of incarcerated populations across countries will first and foremost reflect between-country differences in the kinds of offences punishable by imprisonment, and hence, the kinds of offenders imprisoned in these countries. In this sense, one could take this analysis further and identify groups of offenders who compare closely across the countries, focusing, for example, on crimes punished most similarly in all four countries. Although this would be an important extension of our results, we still feel that comparing employment trajectories up to five years before and after imprisonment is a valuable first contribution to the comparative literature on imprisonment and labour-market outcomes. Indeed, we hope our results have raised as many research questions as they have answered.

Another potential source of bias is the difference in confinement conditions across the countries. If different kinds of rehabilitation programmes are offered in prisons across the countries, and such programmes have employment effects, this would impair the comparability of the effects of imprisonment across countries. The funding, extent and content of such programmes is likely to differ between the four countries, of course, which means that the 'treatment' (first imprisonment) is not the same across countries. Yet, when choosing the 'most similar' approach to comparative studies, this is exactly the point: if effects of imprisonment on post-release employment differ across mostly similar countries, this could indicate that, for example, the Norwegian prison service is doing something right, and that the other countries could benefit from this knowledge. Thus, even though factors such as differences in confinement conditions may explain part of the divergence in the results across countries, they could also be turned into an advantage. We would just need to figure out exactly how the countries differ in this respect in order to capitalize on these differences.

Conclusion

Instead of only examining recidivism, the recent past has seen an increased interest in the effects of criminal sanctions on a wider array of variables used for measuring social integration. The aim of the current study was to expand such analyses to cross-national comparisons on the effects of imprisonment. Given that the domain of our study so far remains relatively unexplored in terms of its validity in comparative work, we aimed for a simple setting in terms of both the sample composition and the outcomes used. Thus, this study is very much a first step, and no conclusive answers for the causes of the observed patterns can be given at this stage. Instead, we hope that these results pave the way for future studies of this kind and also serve as a starting point for discussions about similarities and differences between the Nordic countries in terms of prisoner

reintegration. It would be interesting and important to conduct similar comparisons in a group of countries where penal policies and labour markets are markedly different.

Although the prison populations in all four countries are without a doubt comprised of marginalized individuals (Nilsson 2003; Skarðhamar 2003; Traneas and Geerdsen 2008; Joukamaa *et al.* 2010), it seems that some of these populations might be more disadvantaged than others. Based on the results of this study, it seems that the Finnish prison system receives a first-timer population with much more limited labour-market attachment than its Scandinavian equivalents. If this evidence was ignored, and we only examined the post-release outcomes, it would be easy to (falsely) conclude that the Finnish system fares worse than its closest counterparts. Instead, the present evidence suggests that the observed poor outcomes are more likely a result of selection to imprisonment and labour-market conditions in the larger society. What is more, the differences in post-release employment outcomes between the Nordic countries discovered in the individual-level datasets are perhaps larger than could be deduced from the national prison and unemployment rates that show mostly similar developments in the recent past. In this sense, one implication of this study for future aggregate-level comparisons of criminal justice outcomes is that treating the Nordic countries as one unit of analysis is not entirely unproblematic.

From the perspective of life-course criminology, this research could be described as examining whether the impact of criminal justice contacts on life-course processes depends on the national or historical context (Elder *et al.* 2004). Such inquiries have still been relatively few, but some work is starting to emerge (Murray *et al.* 2007; Zoutewelle-Terovan and Skardhamar 2016). Given that we find that country-specific post-release employment rates and recidivism rates correlate, there is the temptation to speculate that better employment prospects also causally lower the recidivism rates in countries such as Norway. Such finding would be in line with the desistance theory of Laub and Sampson (2003) that gives a pivotal role for turning points such as new employment in processes of desistance. However, before taking into account differences in selection into imprisonment between these countries, we need to be careful with such claims. In the future, a study that would include more specific groups convicted of similar crimes in all Nordic countries would help us separate the impact of selection to incarceration from that of the labour markets and demand for jobs. Other way to expand on the analysis would be to compare cohorts released from prisons during different phases of the economic cycle in each of the four countries.

As a whole, the evidence in this paper suggests that incarceration has a negative effect on employment, especially if we focus on the measure relating to total labour-market inactivity and bear in mind the confounding effect of the life-course transition from education to employment among the youngest sample members. However, there are also some causes for optimism: for example, the before-after comparisons (particularly in Norway) suggest that the effect of prison on employment might be relatively small or even positive among some subgroups of prisoners. A logical next step would be a comparative study on post-release practices in the same countries. This would allow us to see how prison staff, social workers and employment services handle these matters at the time of release and how the wider community receives these former inmates.

The changes in employment rates that we observe in our datasets are smaller than anticipated. Although we think that the overall picture suggests a worsening employment situation due to imprisonment, it is evident that many of the before–after comparisons show relatively modest differences in the labour-market situation. This is a likely result of the obvious fact that imprisonment is only one of the many factors that impact the employment outcomes of this marginalized population. For the most disadvantaged parts of these populations, it is possible that the additional impact of time served does little to alter the life situation, which is already characterized by cumulative disadvantage before incarceration, particularly if a string of lesser sanctions preceded the first incarceration. Bearing in mind recent studies showing greater effects of criminal sanctions on young offenders (Andersen and Andersen 2014; Aizer and Doyle 2015), it might be that imprisonment has a more pronounced effect on the life success of young offenders, although the present results—at face value—suggest otherwise. To establish this, we need new studies involving control groups comprised of young offenders who have been convicted but are subject to alternative sanctions.

Given that this study attempted to conduct an unprecedented comparison based on individual-level register data from four countries, it seems fitting to ask whether this exercise was worth the trouble. Now that register-based studies have generally gained popularity in criminology and that more researchers in different countries are using these data (which are also more readily available), the possibilities and limitations of these data will also become better known and acknowledged. Clearly, the next challenge is to overcome national borders and fully assess the comparability of our datasets and the measures they include. Until this is done, comparisons need to be rather simple and straightforward. A closer collaboration with specialists in different areas of expertise (criminal justice, prison services and national statistics bureaus, for instance) would also help us understand the concrete differences in definitions and practices. Bearing these reservations in mind, we believe that Nordic register data have the potential to become a valuable resource for comparative research in criminology.

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Appendix

Tables of figures underlying Figures 3 and 4.

TABLE A1 *Proportions with non-zero salary*

Time	Finland	Denmark	Sweden	Norway
Age 20–24				
–5	0.465	0.713	0.585	0.714
–4	0.477	0.719	0.579	0.788
–3	0.472	0.699	0.601	0.828
–2	0.397	0.658	0.623	0.819
–1	0.336	0.640	0.623	0.790
0	0.452	0.609	0.434	0.747
1	0.461	0.645	0.450	0.780
2	0.471	0.658	0.584	0.785
3	0.477	0.634	0.576	0.808
4	0.444	0.582	0.662	0.791
5	–	0.530	0.626	0.761
Age 25–30				
–5	0.600	0.769	0.685	0.886
–4	0.553	0.787	0.720	0.874
–3	0.495	0.768	0.715	0.850
–2	0.450	0.733	0.717	0.807
–1	0.389	0.721	0.680	0.778
0	0.550	0.701	0.399	0.718
1	0.484	0.743	0.432	0.712
2	0.464	0.755	0.474	0.728
3	0.446	0.727	0.553	0.745
4	0.422	0.655	0.605	0.748
5	–	0.578	0.605	0.715
Age 30+				
–5	0.538	0.630	–	0.768
–4	0.529	0.630	–	0.742
–3	0.482	0.614	–	0.714
–2	0.421	0.580	–	0.688
–1	0.359	0.548	–	0.649
0	0.521	0.511	–	0.606
1	0.446	0.555	–	0.585
2	0.388	0.559	–	0.599
3	0.386	0.540	–	0.604
4	0.332	0.499	–	0.598
5	–	0.467	–	0.587

TABLE A2 *Proportions with salaries of more than half the population median salary*

Time	Finland	Denmark	Sweden	Norway
Age 20–24				
–5	0.031	0.365	0.053	0.015
–4	0.037	0.380	0.140	0.049
–3	0.056	0.408	0.244	0.109
–2	0.093	0.395	0.284	0.155
–1	0.078	0.382	0.354	0.217
0	0.121	0.371	0.311	0.221
1	0.151	0.425	0.337	0.351
2	0.158	0.466	0.301	0.448
3	0.201	0.450	0.430	0.520
4	0.215	0.411	0.493	0.531
5	–	0.373	0.529	0.522
Age 25–30				
–5	0.203	0.153	0.348	0.217
–4	0.239	0.224	0.384	0.304
–3	0.192	0.322	0.400	0.338
–2	0.168	0.362	0.429	0.345
–1	0.162	0.374	0.411	0.343
0	0.209	0.385	0.420	0.316
1	0.197	0.472	0.373	0.391
2	0.223	0.505	0.383	0.476
3	0.250	0.493	0.435	0.525
4	0.200	0.447	0.436	0.545
5	–	0.392	0.459	0.527
Age 30+				
–5	0.309	0.482	–	0.387
–4	0.268	0.460	–	0.393
–3	0.234	0.453	–	0.381
–2	0.200	0.407	–	0.379
–1	0.152	0.387	–	0.348
0	0.182	0.351	–	0.301
1	0.168	0.373	–	0.346
2	0.184	0.411	–	0.383
3	0.146	0.398	–	0.422
4	0.125	0.364	–	0.431
5	–	0.336	–	0.416

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